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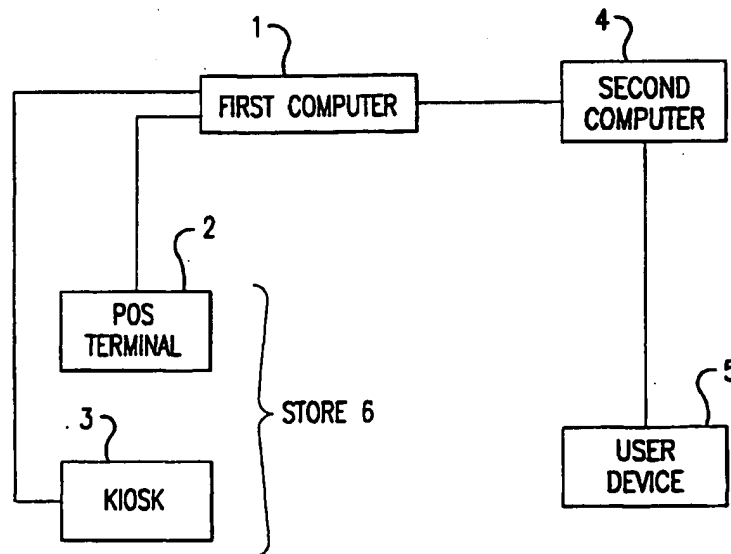
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(54) Title: COOPERATIVE USE OF IDENTIFICATION NUMBERS FOR CONSUMER TRANSACTIONS



(57) Abstract: The invention provides a computer implemented system and method for assuring security and validity of pseudo randomly numbered authorization codes, typically printed on certificates or stored in machine readable memory on user's cards, including a first algorithmic means on a first computer for generating an authorization code in response to a request, and a second algorithmic means on a second computer for determining if a code provided by a user is an authorization code that would be generated by said first algorithmic means. The transmission of the second algorithmic means to the second computer obviates the requirement to transmit actual generated codes from the computer providing the authorization code to the computer determining if the code presented by a user is an authorized code.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

COOPERATIVE USE OF IDENTIFICATION NUMBERS FOR CONSUMER TRANSACTIONS

BACKGROUND OF THE INVENTION

5 FIELD OF THE INVENTION

This invention relates generally to systems for issuing consumer entitlements in a retail store. More specifically, the invention relates to systems for issuing promotions or certificates of the type that requires a unique personal identification number (PIN) to be conveyed to a customer receiving the item.

10

DISCUSSION OF THE BACKGROUND

PINs are printed or encoded on valuable certificates awarded to customers and subject to authorization for various products and services. Each certificate must be resistant to fraud and must be secure from duplication. Having random but valid unique numbers requires the
15 creation and storage of the numbers in databases or on preprinted certificates. The administration of such databases or certificates become expensive and is subject to fraud. The art relating to PIN generation is discussed in detail in United States Patent 5,892,827.

A marketing technique that has enjoyed increasing popularity is the awarding, at the point-of-
20 sale, of a free product or service as an incentive to purchase other products or services. Typical marketing programs offer 5 or 10 minutes of long distance service as incentives to purchasing the sponsoring company's product, as potential prizes for participating in a marketing contest, or as premiums offered under a retailer's frequent shopper loyalty program, or simply as a product for purchase. With respect to marketing long distance telephone
25 service, there are generally two methods employed. One method entails the registration of the consumer and the issuance of a telephone "credit card" for which an account is established and is later credited with certain dollar amounts of telephone service based on the consumer's actions or purchases. Another method is to issue telephone "debit cards" to each consumer meeting the requirements of the particular marketing program. These debit cards are generally
30 pre-authorized in 5 or 10 minute denominations. The issuance of a debit card does not

establish an account, but rather is authorized for the specified amount of telephone service and then becomes useless after the telephone time is exhausted. With both methods, the consumer is usually required to dial a toll-free number and provide a personal identification number (PIN) in order to activate the free service. This PIN must be randomly generated prior to the
5 issuance of the telephone credit/debit card so that verification of valid usage can be established prior to granting the free service.

With each of the processes described above, there is a requirement that a physical card (similar to a consumer credit card) be issued to the consumer. The manufacture and delivery
10 of these cards represents a significant expense and therefore can be cost prohibitive in many circumstances. In addition, there are security concerns inherent in the manufacture and delivery of the cards since someone other than the intended user could easily convert them for their own use (especially in the case of the debit card since the PIN is generally pre-printed on the card itself). Another limitation of the current methods of marketing telephone cards is the
15 fact that the account and/or a PIN must be generated prior to the issuance of a card. This can result in a time lag from the time the consumer complies with the offer and the time at which the telephone service is available (especially with respect to the credit card method). This limitation can also cause shortages or excess inventories of cards based on consumer demand (especially with respect to the debit card method).

20 Regardless of whether a certificate or award is presented to a consumer as an incentive to purchase selected products or simply in response to a request to purchase the service that the certificate provides, the difficulties described above have inhibited safe and efficient distribution of such certificates. The following paragraphs discuss the problems that apply
25 specifically to the distribution of prepaid service certificates, such as prepaid long-distance calling cards.

Problems first arise at the manufacturing stage. Cards are typically preprinted with the value in dollars or the time in minutes, in preset amounts, even though the consumer may prefer to
30 have a different value or time. Moreover, preprinted cards have the further limitation that they

contain fixed important information, such as an "800" toll-free number for accessing the service. Access numbers may become overloaded and cause inconvenient delays for the user and new access numbers may have to be added to meet demand, but there is no convenient way to update this information on a pre-printed card. Similarly, each preprinted card has a

5 PIN (personal identification number) that must be used to activate the card, i.e., turn it on for use. The preprinting of PINs on the card exposes the value of the card to anonymous and usually untraceable theft. Once the card is printed, its value can be stolen without physically taking the card itself. The theft can take place anywhere from the printing source to the retail outlet. It will be apparent that sending these "live" cards through a supply and distribution

10 process is fraught with security risks. The special handling adds to the cost and difficulty of marketing and selling remote value cards. Unsuspecting consumers may purchase cards that are either depleted or being used by others purchased illegally. The merchandising and sales of tamper resistant cards adds to the cost and effort for everyone. Live cards with protected PINs must be treated as a near-cash item through the distribution and retailing process. As a

15 delivery of cards is made to a store, if it is not kept under lock and key or in the cash drawer it may be easily stolen, lost or misplaced. The cards themselves are very small and easily concealed by unscrupulous employees or shoppers. Therefore, suppliers and retailers of these cards are exposed to a very large financial risk in handling the cards. If the value is taken illegally from a card, it is not possible for the retailer to accept the return or bill back the

20 supplier.

One solution is to distribute "dead" cards instead of "live" ones. A dead card is one that has a PIN that must be activated by the retailer before distribution to the consumer. Activating preset PINs is very expensive, time consuming and error prone. Distributing dead cards with

25 PINs that require activation is, therefore, inconvenient and is still prone to theft and misuse because some card suppliers preprint and assign the PINs in a uniform, predictable or unprotected manner. Dishonest persons may dial the access number and enter PINs until they successfully access the service, or may look for a pattern in multiple PINs, and then resell the PIN and access numbers to different users. Another potential problem is that some PIN

30 sequences are purposely short, for the convenience of the user. This creates a dangerous

situation, since a computer dialer can more easily pick and decipher short PINs that are not encoded.

Another proposed solution to the security problem is to use scratch-off coatings and
5 removable tape covers over the PINs. This has a limited effect because the "live" and valuable cards can still be stolen and used anonymously by dishonest persons, anywhere through the supply chain.

Systems have been proposed in which prepaid cards are sold without a PIN. The PIN is
10 activated or attached to the card after a call is made to a central computer that issues PINs. In some systems of this type PINs may be downloaded in a batch, and then held until a card is purchased, at which time a PIN is attached to the preprinted portion of the card. The principal limitation of this method is that a call must be made to a central computer to issue a PIN. This slows the down the transaction and, in a retail environment, slows down the cashier while the
15 computer is dialed and the PIN is issued. Further, a dishonest or inattentive cashier could sell or give away the value of the PINs.

Some prepaid telephone cards are sold or vended in enclosed plastic containers placed in a store display rack. The cashier selling such cards typically scans a bar code on the display
20 itself, and a PIN is obtained by placing a call to the service provider. This bar-coded activation method fails to prevent fraud or misuse by others as the bar codes can be duplicated and used on more than one card. A thief could steal one or more cards and purchase one to obtain the valid batch code, thus activating the stolen cards as well.

25 It will be appreciated from the foregoing that prior art techniques for distributing certificates or cards redeemable for a valuable service all have practical difficulties that render the certificates or cards both inconvenient to the consumer and vulnerable to fraud or theft. There is a need for a new approach for distributing such certificates or cards in a convenient manner without compromising the security of the valuable services that are obtained by use of the

cards. The present invention satisfies this need, as briefly described in the following summary of the invention.

While the invention will be described mainly in connection with the awarding of free long distance telephone service, it is to be understood that the principles of the invention are also applicable to providing any award, at the point-of-sale, where the subsequent verification of the award can be accomplished without the need for a pre-established list of valid authorization codes.

10 SUMMARY OF THE INVENTION

The invention provides a computer implemented system and method for assuring security and validity of pseudo randomly numbered authorization codes, typically printed on certificates or stored in machine readable memory on user's cards, including a first algorithmic means on a first computer for generating an authorization code in response to a request, and a second algorithmic means on a second computer for determining if a code provided by a user is an authorization code that would be generated by said first algorithmic means. The transmission of the second algorithmic means to the second computer obviates the requirement to transmit actual generated codes from the computer providing the authorization code to the computer determining if the code presented by a user is an authorized code.

The algorithm transmitted from the first computer, such as a retail store computer that functions to monitor transactions at point of sale (POS) terminals and kiosks of a store, to the second computer may either be the same algorithm used by the first computer, or the transmitted algorithm may be modified so that it functions by receiving a user's code and determining if the user's code is a code that could have been generated by the algorithm used in the first store. That is, the computer code defining the algorithm transmitted to the second computer may not have the ability to print or display codes, thereby preventing a user of the second computer from fraudulently obtaining and validating authorization codes. Instead the computer code defining the algorithm transmitted to the second

computer may only have the ability to determine whether a code input to the second computer is valid in the sense that the code input into it is one that could be generated by the algorithm running on the first computer.

- 5 Preferably, the authorization code contains a date indicating a date on which it was generated. Preferably, the product or service is a telecommunications services credit. The product or service may be a discount on another product or service. Typically, but not necessarily, product or service is a product or service that is not provided by the retail store at which the user receives the authorization code. The authorization code may include
10 digits associated with the store at which the authorization code was generated. Preferably the authorization code generation algorithm generates a code only once.

- Briefly, and in general terms, the method of the invention comprises the steps of detecting the occurrence of an event that has been preselected to trigger the generation of an authorization
15 code for distribution to a customer of a retail store; generating a certificate or card storing in human or machine readable form the authorization code, the authorization codes generated in a seemingly random sequence by a pseudo random code generating algorithm to avoid deciphering of the algorithm; receiving at a second computer from a user a code; using an algorithm to determine if the received code from the user is one that would be generated by
20 the algorithm, and if so, determining to provide the associated product or service associated with the code to the user. If a determination is made to provide the associated product or service to the user, the product or service provider provides the product or service to the user.

BRIEF DESCRIPTION OF THE DRAWINGS

- 25 A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Figure 1 is a schematic of an embodiment of a novel computer system of the invention;

Figure 2 is a flow chart of the process of a consumer receiving an authorization code for the system of Figure 1; and

Figure 3 is a flowchart of the process of validating the authorization code for the system of Figure 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the drawings, like reference numerals designate identical or corresponding parts throughout the several views, and Figure 1 shows a first computer 1 connected to a POS terminal 2 and a kiosk 3 of a store 6. The POS terminal 2 includes means to enter transaction data and provide price information for transacting a sale with a customer. POS terminals are well known in the art. The POS terminal 2 may include a machine means to identify products codes and a user identification, such as a bar code scanner (for scanning product identification bar codes on product items and user identification bar codes on user identification cards), a magnetic stripe reader for scanning magnetic media containing a user's identification number (such as a bank or credit card), a MICR coder reader for reading MICR codes on checks to obtain check authorization and to obtain a user identification. The POS terminal also includes a means to write an authorization code in either human readable form or machine readable form.

The store 6 may also include a kiosk 3. For the purposes of this invention, a kiosk is a terminal of a computer system including a means for the customer to enter a payment (such as cash or a credit card) or a unique identification associated with the customer and a means for writing an authorization code in either human readable form or machine readable form.

The POS terminal 2 and the kiosk 3 of the store 6 are each connected via a communication line with the first computer 1. The communication line may pass through network connections or other intermediaries. For example, there may be a store controller computer interposed in the communication line between the first computer 1 and the POS terminal 2 and

kiosk 3. However, it is to be understood that the first computer may be a store controller computer.

The first computer 1 is connected via a communication line to a second computer 4. There may be intermediary devices interposed along the communication line connecting the first computer 1 and the second computer 4 so long as the first computer 1 can communicate with the second computer 4.

The second computer 4 is in communication with a user device 5. The user device 5 may be a wire line telephone, a wire less telephone, or another computer. The user device 5 may be any device that enables a user to transmit data signals conveying an authorization code to the second computer 4.

In figure 2, in step 10, the consumer takes action which results in a request signal transmitted from the POS terminal 2 or the kiosk 3 to the first computer 1 prompting generation of an authorization code. The action by the consumer may be the purchase of an item at the POS terminal or the kiosk entitling the user to an authorization code for a product, service, or discount on a product or service, it may be an explicit request by the consumer to purchase an authorization code entitling the user to receive the product or the service, it may be based upon the customer's prior shopping history as recorded in a database associated with the first computer 1, or it may instead be based a promotional campaign in which each consumer at either the POS terminal 2 or the kiosk 3 are provided an authorization code. In step 11, the first computer 1 generates an authorization code. In step 12, the first computer 1 transmits the generated code to the POS terminal or kiosk. In step 13, the POS terminal or kiosk records the authorization code in a recordable medium. In the preferred embodiment the medium is paper and the code is in human readable digits, such as letters and numbers, and the printed paper includes a telephone number to call to obtain the authorized product or service.

In figure 3, in step 14, the second computer system 4 receives the code entered into the user device 5. In step 21, the second computer system 4 executes an algorithm that determines if

the code it received is one that could have been generated by the authorization code algorithm.

- In the preferred embodiment, the product or service associated with the authorization code is prepaid telecommunication time. In the preferred embodiment, if the second computer system 4 determines that the code it received from the user device 5 is one that could have been generated by the authorization code algorithm, it queries the user device 5 for a telephone number to which to credit prepaid telecommunications time, receives a telephone number from the user device 5, and credits the account for that telephone number.
- 10 Optionally, the second computer system 4 may also provide a dial around telephone number to the user device 5 and instruct the consumer to dial the dial around number as a precondition for using the credit obtained from the authorization code. Preferably, the second computer system stores authorization numbers received from a user device and does not reauthorize any of those numbers.

I CLAIM:

1. A method for crediting a service or product, comprising the steps of:
transmitting code defining an algorithm from a first computer to a second
computer, said algorithm for generating authorization codes;
5 receiving at the first computer a signal from a terminal in a retail store indicating an
entitlement to credit for a product or service;
using said algorithm in said first computer to generate an authorization code for said
entitlement in response to receiving said signal;
generating a certificate containing said authorization code at said terminal;
10 receiving a user's code from a user at said second computer; and
using said algorithm in said second computer to determine if said user's code is an
authorization code in order to determine whether to provide said product or service to said
user.
2. The method of claim 1 wherein said authorization code contains a date on which
15 said signal was received at said first computer.
3. The method of claim 1 or 2 wherein said product or service is a telecommunications
services credit.
4. The method of claim 1 or 2 wherein said product or service is a discount on another
product or service.
- 20 5. The method of claim 1 wherein said product or service is not provided by said retail
store.
6. A method for crediting a service or product, comprising the steps of:
transmitting code defining a second algorithm to a second computer, said algorithm
for determining if a user's code is an authorization code generated by a first algorithm;
25 receiving at a first computer a signal from a terminal in a retail store indicating an
entitlement to credit for a product or service;
using code defining said first algorithm in said first computer to generate an
authorization code for said entitlement in response to receiving said signal;
generating a certificate containing said authorization code at said terminal;
30 receiving a user's code from a user at said second computer; and

using said second algorithm in said second computer to determine if said user's code is an authorization code generated by said first algorithm in order to determine whether to provide said product or service to said user.

7. The method of claim 6 wherein said authorization code contains a date on which said signal was received at said first computer.
8. The method according to claim 6 wherein said product or service is a telecommunications services credit.
9. The method of claim 6 wherein said product or service is a discount on another product or service.
10. The method of claim 6 wherein said product or service is not provided by said retail store.
11. A system for crediting a service or product, comprising:
means for transmitting code defining an algorithm from a first computer to a second computer, said algorithm for generating authorization codes;
means for receiving at the first computer a signal from a terminal in a retail store indicating an entitlement to credit for a product or service;
means for using said algorithm in said first computer to generate an authorization code for said entitlement in response to receiving said signal;
means for generating a certificate containing said authorization code at said terminal;
means for receiving a user's code from a user at said second computer; and
means for using said algorithm in said second computer to determine if said user's code is an authorization code in order to determine whether to provide said product or service to said user.
12. The system of claim 11 wherein said authorization code contains a date on which said signal was received at said first computer.
13. The system of claim 11 wherein said product or service is a telecommunications services credit.
14. The system of claim 11 wherein said product or service is a discount on another product or service.

15. The system of claim 11 wherein said product or service is not provided by said retail store.
16. A system for crediting a service or product, comprising the steps of:
means for transmitting code defining a second algorithm to a second computer, said
5 algorithm for determining if a user's code is an authorization code generated by a first algorithm;
means for receiving at a first computer a signal from a terminal in a retail store indicating an entitlement to credit for a product or service;
means for using code defining said first algorithm in said first computer to generate
10 an authorization code for said entitlement in response to receiving said signal;
means for generating a certificate containing said authorization code at said terminal;
means for receiving a user's code from a user at said second computer; and
means for using said second algorithm in said second computer to determine if said
15 user's code is an authorization code generated by said first algorithm in order to determine whether to provide said product or service to said user.
17. The system of claim 16 wherein said authorization code contains a date on which said signal was received at said first computer.
18. The system according to claim 16 wherein said product or service is a
20 telecommunications services credit.
19. The system of claim 16 wherein said product or service is a discount on another product or service.
20. The system of claim 16 wherein said product or service is not provided by said retail store.
- 25 21. A computer program product for instructing a computer system for crediting a service or product, comprising programming the computer system to provide the steps of:
transmitting code defining a second algorithm to a second computer, said algorithm for determining if a user's code is an authorization code generated by a first algorithm;
receiving at a first computer a signal from a terminal in a retail store indicating an
30 entitlement to credit for a product or service;

using code defining said first algorithm in said first computer to generate an authorization code for said entitlement in response to receiving said signal;

generating a certificate containing said authorization code at said terminal;

receiving a user's code from a user at said second computer; and

5 using said second algorithm in said second computer to determine if said user's code is an authorization code generated by said first algorithm in order to determine whether to provide said product or service to said user.

22. A computer program comprising computer programming code means adapted to perform the steps of claim 1 or 6 when that program is run on a computer.

10 23. A method as claimed in claim 1 or 6 substantially as hereinbefore described with reference to, and as shown in the accompanying drawings.

24. A system as claimed in claim 1 or 6 substantially as hereinbefore described with reference to, and as shown in the accompanying drawings.

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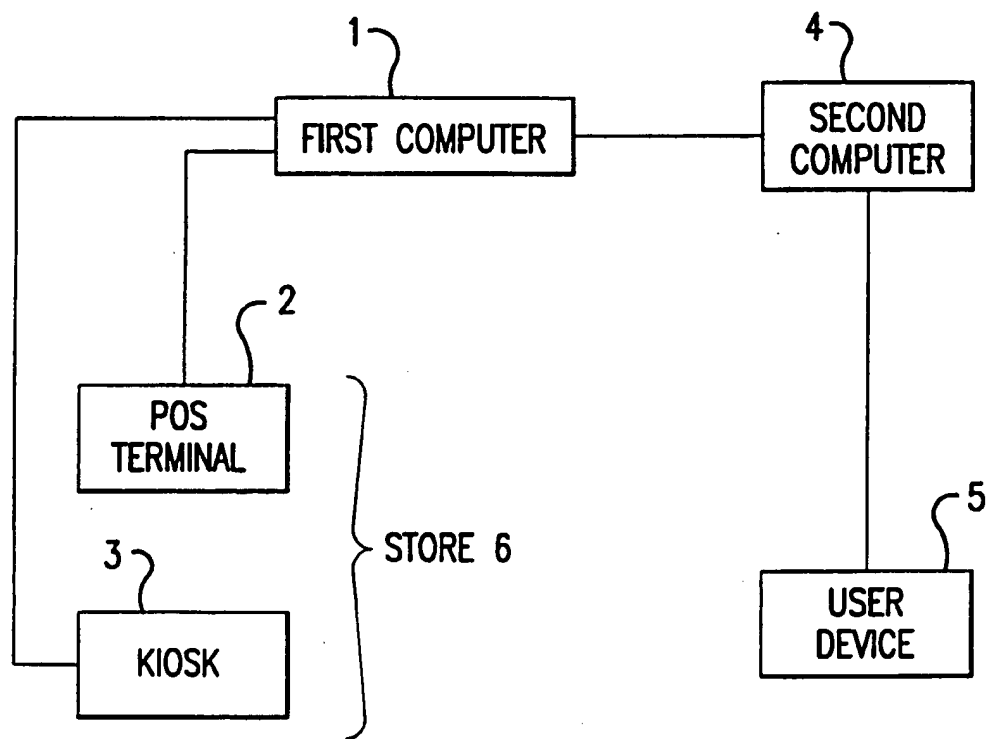


FIG. 1

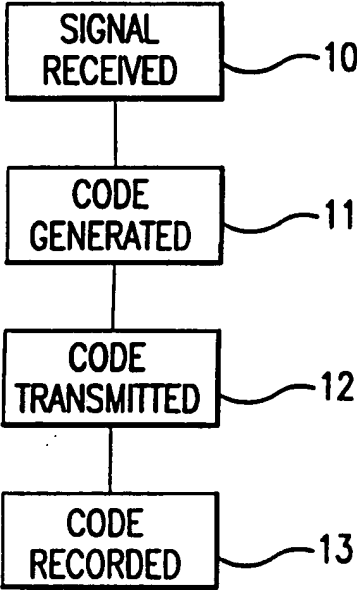


FIG.2

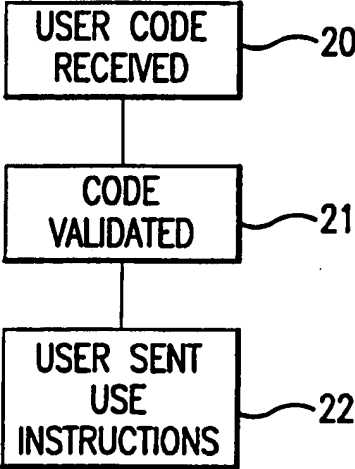


FIG.3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/06708

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G07F17/42 G06F17/60 G07G1/14				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 G07F H04L H04M G06F G07D G07G				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	WO 97 30409 A (CATALINA MARKETING INT) 21 August 1997 (1997-08-21) page 8, line 16 -page 21, line 12 ---	1,3-6, 8-11, 13-16, 18-22		
A	US 5 892 827 A (BEACH KIRK W ET AL) 6 April 1999 (1999-04-06) cited in the application column 5, line 38 -column 12, line 67 ---	1,3-6, 8-11, 13-16, 18-20		
A	US 4 819 267 A (CARGILE WILLIAM P ET AL) 4 April 1989 (1989-04-04) column 2, line 18 -column 2, line 54 column 6, line 19 -column 7, line 37 --- -/--	1,2,6,7, 11,12, 16,17		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
* Special categories of cited documents: <table border="0"> <tr> <td> *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed </td> <td> *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family </td> </tr> </table>			*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family			
Date of the actual completion of the international search 12 December 2000		Date of mailing of the international search report 21/12/2000		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Aupiais, B		

INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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